

applied to four specimens. Of these, fig. 2 of pl. 576 may be taken as the type, distinguished from *T. perforata* by its very narrowly elliptical form. The name *T. variabilis* of Sowerby may be now retained for it without confusion, because Schlothheim's *T. variabilis* is a *Rhynchonella*.

The next name is *T. maxima*, Charlesworth*. The large example which he figures may be taken as the type; the smaller shell is much narrower and is of the shape of *T. variabilis*. The large *T. maxima* is somewhat narrower and more elliptical than *T. spondylodes*, and is rather broader than *T. perforata*. The shells which Davidson figures in his 'Monograph of Tertiary Brachiopoda,' pl. ii. figs. 1-4, represent *T. maxima*, while his fig. 5 is a young example of *T. variabilis*.

Whatever opinions may be held as to the advisability of distinguishing all these forms by name, yet placed in this order—*T. spondylodes*, *T. maxima*, *T. perforata*, *T. variabilis*—the forms indicate a sequence passing from broadly oval to narrowly elliptical, the broadly oval stage giving place to the elliptical earlier and earlier in each form, so that while nearly adult *T. maxima* shows broadly oval growth-lines, the quite youthful *T. variabilis* shows elongately elliptical growth-lines.

Besides these forms there are the dwarfs, which may be the final expression of the series; mixed with them may be some of the young of the other forms which came to a premature end.

LXXI.—New Asiatic Apodemus, Evotomys, and Lepus.

By OLDFIELD THOMAS.

Apodemus † *semotus*, sp. n.

27. *Mus* —, Swinhoe, P. Z. S. 1864, p. 382.

65. † *Mus badius*, Hodgson, id. P. Z. S. 1870, p. 637 (*nee* Hodgs.).

Like "*Mus sylvaticus draco*," B.-Ham., but much darker coloured.

Similar in general proportions to the Fo-kien *draco*. Fur thin, not spinous, at least in winter, 7-8 mm. in length on the back. General colour dark brownish, something between "bistre" and "Prout's brown," quite different to the rufous or fulvous of the Chinese forms *chevrieri* and *draco*. Under surface soiled grey, the hairs slaty for four-fifths their length, their tips dull whitish. Ears rather large, almost

* Ann. & Mag. Nat. Hist. 1837, p. 92.

† Kaup, 1829. Antedating *Micromys*, Dehne, 1841. Type, *A. agrarius*.

naked, greyish brown. Hands and feet dull whitish. Tail rather longer than head and body, thinly haired, brown above, but little lighter below. Mammæ apparently only $1-2=6$, as in *A. sylvaticus*, the anterior pectoral pair absent in the two nursing females in the set.

Skull quite like that of *draco*; the front edge of the zygomatic plate slightly concave; the postero-internal or "x" cusp of m^1 and m^2 better developed than in most of the N.-Chinese and Japanese mice recently assigned by me to different subspecies of *A. speciosus*.

Dimensions of the type (measured on skin):—

Head and body (probably stretched) 103 mm.; tail 114; hind foot (wet) 24; ear (wet) 16.

Skull: tip of nasals to front corner of interparietal 25; zygomatic breadth 14; nasals 11; palatilar length 12.5; palatal foramina 5.6; diastema 8; length of upper molar series 4.1.

Hab. Mt. Arizan, Central Formosa.

Type. Adult female. B.M. no. 8. 4. 1. 48. Collected 13th November, 1906, by Mr. Alan Owston's native collectors. Three specimens examined.

As a nameable form, and irrespective of the mammæ, this mouse is readily distinguishable by its much darker general colour from its mainland neighbours, of which it is, perhaps, an insular "saturate" representative.

But some doubt is thrown on this view by the apparent presence of only $1-2=6$ mammæ, the number characteristic of the European and W.-Asiatic *A. sylvaticus*, while hitherto all the far eastern members of the group have been found to have $2-2=8$, which I have therefore supposed to be characteristic of them. All the Korean and Chinese examples of *A. speciosus* have the latter number, as also has the Fo-kien *A. s. draco*. The skull, however, is clearly that of the *speciosus* rather than of the *sylvaticus* group.

Evotomys frater, sp. n.

A large dark-coloured species, much browner than the only other Thian-Shan species, *E. centralis*, Miller.

Size fairly large. Fur soft, loose, not so long as in *centralis*, the hairs of the back about 13 mm. in length. General colour above approaching "mummy-brown," with only enough rufous suffusion to indicate that it is an *Evotomys*. Head and sides rather clearer brown. Rump smoky grey, almost blackish near the root of the tail. Under surface unusually dark, little lighter than "hair-brown," not defined on sides, the hairs slaty for four-fifths their length, with dull

"pinkish-buffy" tips. Hands and feet brownish white. Tail of medium length, longer than in *centralis*, and not so heavily haired as in that species; black above, dull whitish below.

Skull of the younger specimen rather larger than in the type of *E. centralis*, which is of about the same age, the roots of the molars being just commencing to form within their basal capsules.

Dimensions of the type:—

Head and body (measured on skin) 112 mm.; tail (vertebræ *in situ*) 48; hind foot (wet) 19; ear (wet) 14.

Skull: length from nasal tip to back of interparietal 23; zygomatic breadth 13; nasals 7; interorbital breadth 4; brain-case breadth 12; palatilar length 11; diastema 7; palatal foramina 5; upper molar series (crowns) 5.

Hab. Thian-Shan (probably near Przewalsk).

Type. Subadult female. B.M. no. 8. 3. 2. 18. Collected by A. A. Kutsenko. Two specimens.

The only species of *Evotomys* hitherto described from this part of Asia is Mr. Miller's *E. centralis*, of which the type is in the British Museum. That animal is smaller and shorter-tailed than *E. frater*, and its colour is that of an ordinary *Evotomys*, while *E. frater* is the brownest "red vole" as yet discovered.

Lepus formosus, sp. n.

Closely allied to *L. sinensis*, but the colour throughout paler and less warm.

Size rather less than in *sinensis*, though there seems less difference in the skulls than in the hind feet, the Formosan form being therefore proportionally shorter-footed. General colour above greyish, approximating to drab-grey of Ridgway, heavily lined with black, the subterminal rings on the hairs cream-buff; bases of hairs slaty. Face like back, an indistinct lighter line running through the eye. Nape pinkish buff as compared with ochraceous or tawny in *sinensis*. Chin and belly dull white, a wash of pale buffy passing down the sides of the latter. Band across throat pale drab. Limbs buffy, much paler than in *sinensis*. Ears short, the proectote grizzled greyish like the forehead, metectote pinkish buffy like nape proximally, the distal fourth blackish; metentote and the fringe along the anterior edge buffy whitish, a darker shade on its middle portion. Tail about as in *sinensis*, except that the colour is paler and greyer.

In summer pelage the colours are much the same throughout or perhaps a little browner.

Skull practically as in *sinensis*, though the bullæ appear to average rather smaller.

Dimensions of the type (measured on a rather shrunk skin):—

Head and body 380 mm.; tail 30; hind foot 83; ear 65.

Skull: greatest length 81; basilar length 59; zygomatic breadth 37·5; length of nasals (diagonally) 37; interorbital breadth 16; palatal foramina $19 \times 7\cdot5$; length of tooth-row (on alveoli) 14·7.

Another specimen has a hind foot measuring 87 mm.

Hab. Formosa; type from Baksa.

Type. Adult male. B.M. no. 93. 12. 5. 6. Collected 4th March, 1893, by P. A. Holst; presented by Henry Seebohm, Esq. Three young skins also received from the same source. Another specimen obtained on Mt. Arizan by Mr. A. Owston's collectors.

This hare may be readily distinguished from *L. sinensis* by its much paler colour, that animal having the pale rings on its dorsal hairs varying from buffy to ochraceous, thus giving a very much warmer tone to the whole animal.

It is, however, to be noticed that Consul Swinhoe recorded *L. sinensis* as a native of Formosa*, and that the one adult skin (no. 62. 12. 24. 16) of his collection sent as from the island is certainly more like *sinensis* than *formosus*. Whether, however, both forms occur in Formosa, or whether this specimen has been wrongly labelled, are questions which can only be settled when the mammal fauna of the island is more completely known. But considering the uniformity among themselves of all the specimens, young and old, that are unquestionably from Formosa, I am inclined to think that the specimen referred to has been incorrectly labelled.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

December 4th, 1907.—Sir Archibald Geikie, K.C.B., D.C.L., Sc.D., Sec.R.S., President, in the Chair.

The following communications were read:—

1. 'The Faunal Succession in the Carboniferous Limestone (Upper Avonian) of the Midland Area (North Derbyshire and North Staffordshire).' By Thomas Franklin Sibly, B.Sc., F.G.S.

The area dealt with is the irregularly-shaped periclinal mass

* P. Z. S. 1862, p. 359.